

IMMATURE STAGES OF *MONTINA CONFUSA* (STÅL) (HETEROPTERA:
REDUVIIDAE: HARPACTORINAE)

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Abstract.—The egg and five instars of the harpactorine *Montina confusa* (Stål) are described and illustrated. Descriptions include morphological and morphometric characters of specimens reared in the laboratory.

Key Words: Heteroptera, Reduviidae, Harpactorinae, *Montina confusa*, eggs, nymphs

The genus *Montina* Amyot and Serville is comprised of ten species (Maldonado Capriles 1990). Pais Bueno and Berti Filho (1984a, b) described the nymphs and adult male and female of *Montina confusa* Stål and gave notes on biological aspects. Freitas et al. (1991), Rosa et al. (1991), Consoli and Amaral Filho (1992) and Freitas (1995) evaluated prey consumption by this species reared under laboratory conditions.

In this paper, we redescribe the egg and five nymphal instars of *Montina confusa* because previous descriptions are inadequate and the morphological terminology does not follow that used for Reduviidae.

MATERIALS AND METHODS

The material used in this study consists of eggs and specimens reared in the laboratory at the Instituto de Biologia, UNICAMP (Universidade do Campinas), Campinas, São Paulo, Brazil. The material was preserved in 75% ethanol. Terminology used for morphology follows that of Miller (1971) and Swadener and Yonke (1975). The measurements are given in millimeters (a total of 10 specimens for each instar). Illustrations were made with a drawing tube

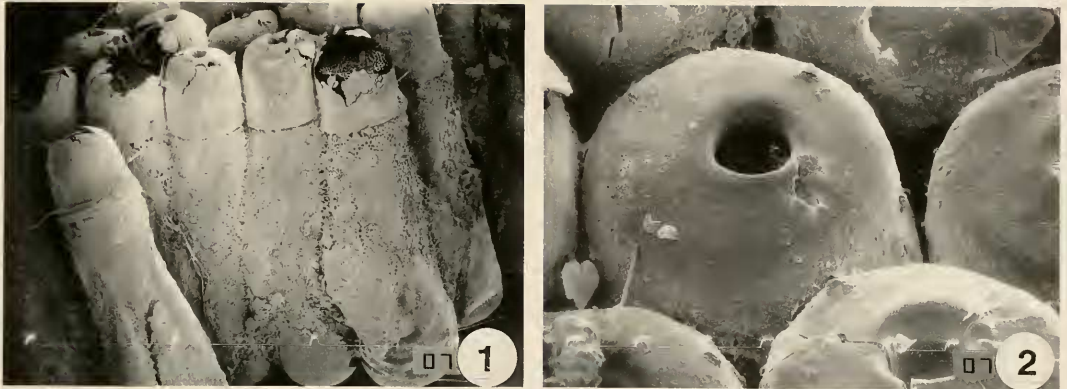
on a Wild M-stereomicroscope. Scanning electron micrographs of eggs and fifth instars were made from specimens mounted on stubs, sputter-coated with a gold palladium alloy, and studied with a JEOL T-100 SEM.

DESCRIPTION

Montina confusa Stål

Egg. (Figs. 1–2).—Length 2.23–2.34 ($X = 2.29$), diameter of operculum 0.386–0.466 ($X = 0.416$). Ova consist of regular masses of dark brown eggs cemented together by their margins. Egg cylindrical and elongated (Fig. 1). Chorion provided with well-developed perforations near apex. Most of chorion and entire surface of operculum covered with a mucilaginous substance. Operculum with a medial pore (Fig. 2).

First instar (Fig. 3).—Total length 3.00–3.40 ($X = 3.22$). Length of head 0.92–1.00 ($X = 0.97$), width of head 0.50–0.57 ($X = 0.52$). *Head:* Pyriform, yellowish, stained with dark brown behind eyes; setae short, longer posteriorly. Postocular region surrounded. Labrum and clypeus brown distally; clypeus and gena pilose. Eyes intense red, prominent, rounded anteriorly, truncate



Figs. 1–2. Micrographs of *Montina confusa* eggs. 1. General aspect in lateral view, 35 \times . 2. Chorion and operculum, 150 \times .

posteriorly, not passing superior or inferior edge of the head. Width of eye 0.07–0.10 ($X = 0.08$), interocular space 0.33–0.38 ($X = 0.36$). Rostrum yellow, segment I nearly glabrous, length 1.15–1.28 ($X = 1.19$), ratio of segment lengths ca. 1:1.41:0.48. Antenna elongate, filiform, segments I and IV pale brown, segments II and III dark brown, with finer and more abundant setae apically; length 4.32–4.94 ($X = 4.71$), ratio of segment lengths ca. 1:0.37:0.41:1.18.

Thorax: Pronotum pale brown, length 0.28–0.33 ($X = 0.31$), width 0.50–0.52 ($X = 0.51$), with two anterolateral tubercles; median sulcus with scattered setae. Propleuron pale brown; mesopleuron pale brown, dark brown ventrally; metapleuron dark brown, tinged with pale brown. Prosternum, mesosternum, and metasternum white, tinged with yellow. Wings pads absent. Legs yellowish, with irregular dark stains and scattered short setae.

Abdomen: Length 1.33–1.60 ($X = 1.42$), width 0.60–0.72 ($X = 0.66$); fusiform, pale brown; pilose.

Second instar (Fig. 4).—Total length 4.00–4.94 ($X = 4.47$). Length of head 1.38–1.55 ($X = 1.49$), width of head 0.67–0.73 ($X = 0.71$). **Head:** Pyriform, pale brown, similar to instar V; without spines or small stains in front of eye; ocelli outlined in red. Eyes similar to instar V. Width of eye 0.12–0.13 ($X = 0.12$), interocular

space 0.45–0.48 ($X = 0.46$). Rostrum pale brown. Rostral length 1.63–1.78 ($X = 1.68$), ratio of segment lengths ca. 1:1.24:0.47. Antenna elongate, filiform, dark brown, segments III and IV yellowish; segment I with two whitish bands; all segments setose; lengths 6.62–7.09 ($X = 6.86$), ratio of segment lengths ca. 1:0.35:0.51:1.01.

Thorax: Pronotum dark brown, length 0.42–0.53 ($X = 0.49$), width 0.67–0.73 ($X = 0.70$), with two anterolateral tubercles. Median sulci present. Pleural area dark brown, tinged with pale brown, setose. Stridulatory sulci whitish. Prosternum, mesosternum, and metasternum pale brown. Area between wing pads pale brown. Wings pads 0.57–0.67 long ($X = 0.60$), dark brown. Legs yellowish to pale brown with irregular dark stains, tarsi darker brown; all segments setose; trochanter I densely pilose, black ventrally.

Abdomen: Length 1.15–1.33 ($X = 1.26$), width 0.70–1.25 ($X = 1.06$). fusiform, pale brown, with setae; scent glands on abdominal segments 3–5 pale brown; ventrally with black spots.

Third instar (Fig. 5).—Total length 5.70–6.33 ($X = 6.00$). Length of head 1.58–2.05 ($X = 1.87$), width of head 0.92–1.02 ($X = 0.95$). **Head:** Pyriform, pale brown, similar to instar V without spines; ocelli outlined in red. Eyes similar to instar V. Width of eye 0.15–0.22 ($X = 0.18$), interocular space

0.52–0.63 ($X = 0.59$). Rostrum similar to instar V, paler, especially first segment. Rostral length 2.19–2.42 ($X = 2.32$), ratio of segment lengths ca. 1:1.24:0.42. Antenna similar to instar V, with whitish bands on segment II and III. Antennal length 8.84–9.71 ($X = 9.36$), ratio of segment lengths ca. 1:0.36:0.63:0.87.

Thorax: Pronotum similar to instar V. Length of pronotum 0.67–0.77 ($X = 0.73$), width of pronotum 0.93–1.05 ($X = 0.97$). Pleural areas pilose. Stridulatory sulci whitish. Propleuron and mesopleuron pale brown tinged with orange except for dark margins on propleuron, posterior and inferior fringe dark on mesopleuron, metapleuron dark brown, pale brown medially. Prosternum, mesosternum, and metasternum whitish, tinged with pale brown. Area between wing pads pale brown, tinged with orange, whitish anterior and posteriorly. Wings pads 0.80–0.93 long ($X = 0.86$), dark brown, tinged with pale brown. Legs whitish, except coxae and femora pale brown distally. Coxae, trochanters, femora, and tibiae stained with dark brown. Trochanter I, femora I basally, and tibia I distally with dense black setae ventrally.

Abdomen: Length 3.00–4.00 ($X = 3.48$), abdominal width 0.95–1.42 ($X = 1.21$). Abdomen fusiform, pale brown, tinged with orange and whitish; setose; scent glands well developed on abdominal segments 3–5. Segment 1 whitish; segment 2 pale brown tinged with white; segment 3 dark brown tinged with white; segment 6 dark brown, with a black spot expanded laterally. Yellowish ventrally, tinged with pale brown; segments 4–6 red and white stained, with small black spots medially; segment 8 brown stained.

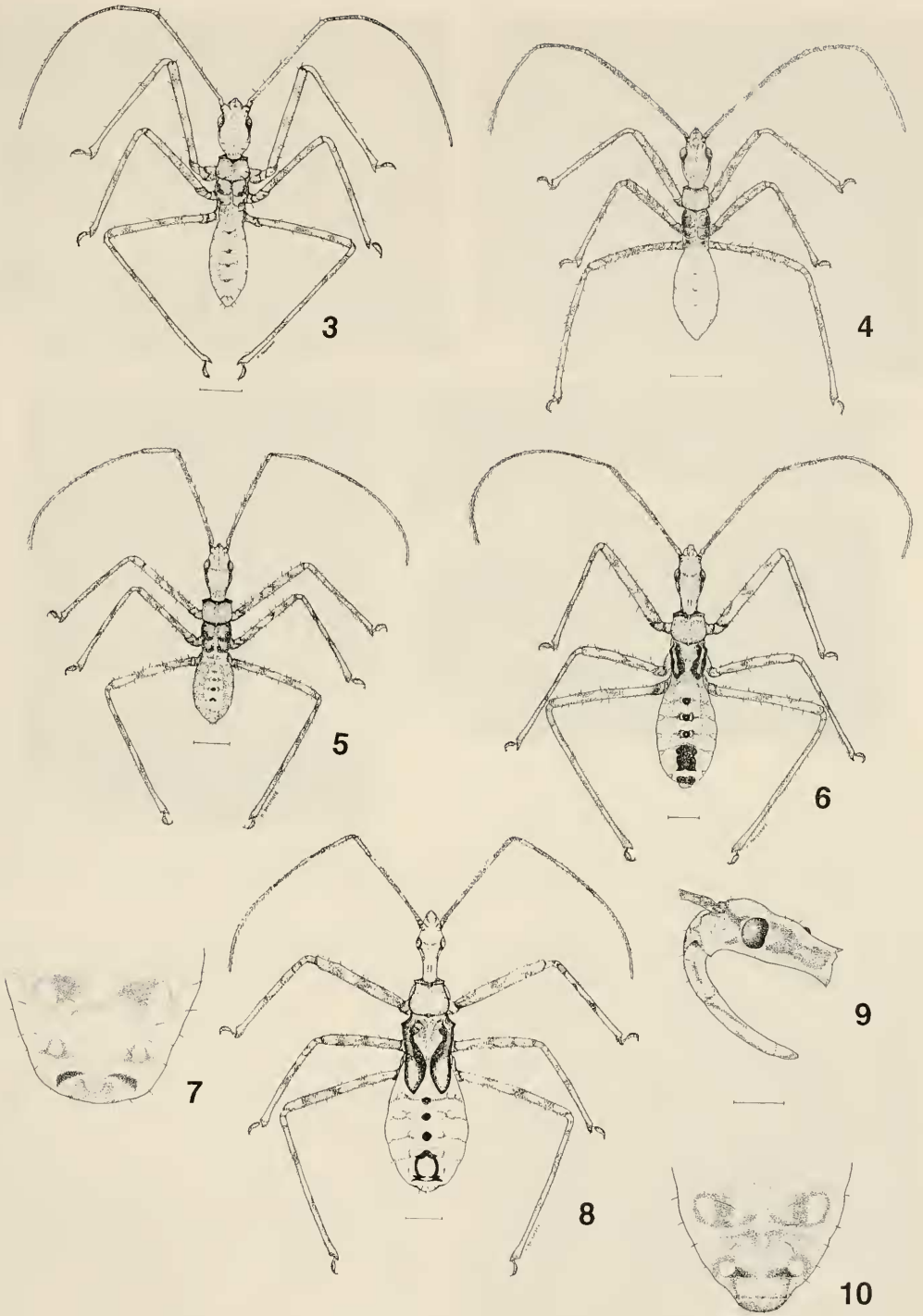
Fourth instar (Fig. 6).—Total length 8.10–9.12 ($X = 8.37$). Length of head 2.63–2.93 ($X = 2.79$), width of head 1.17–1.30 ($X = 1.21$). *Head:* Similar to instar V, with spines; ocelli less distinctly outlined in red, in some specimens superior border of gena dark. Eyes as instar V. Width of eye 0.20–0.27 ($X = 0.23$), interocular space

0.68–0.83 ($X = 0.75$). Rostrum similar to instar V, segment I paler and stains on edges of III absent. Rostral length 2.83–3.47 ($X = 3.12$), ratio of segment lengths ca. 1:1.14:0.36. Antenna as instar V; length 11.89–13.08 ($X = 12.35$), ratio of segment lengths ca. 1:0.38:0.81:0.82.

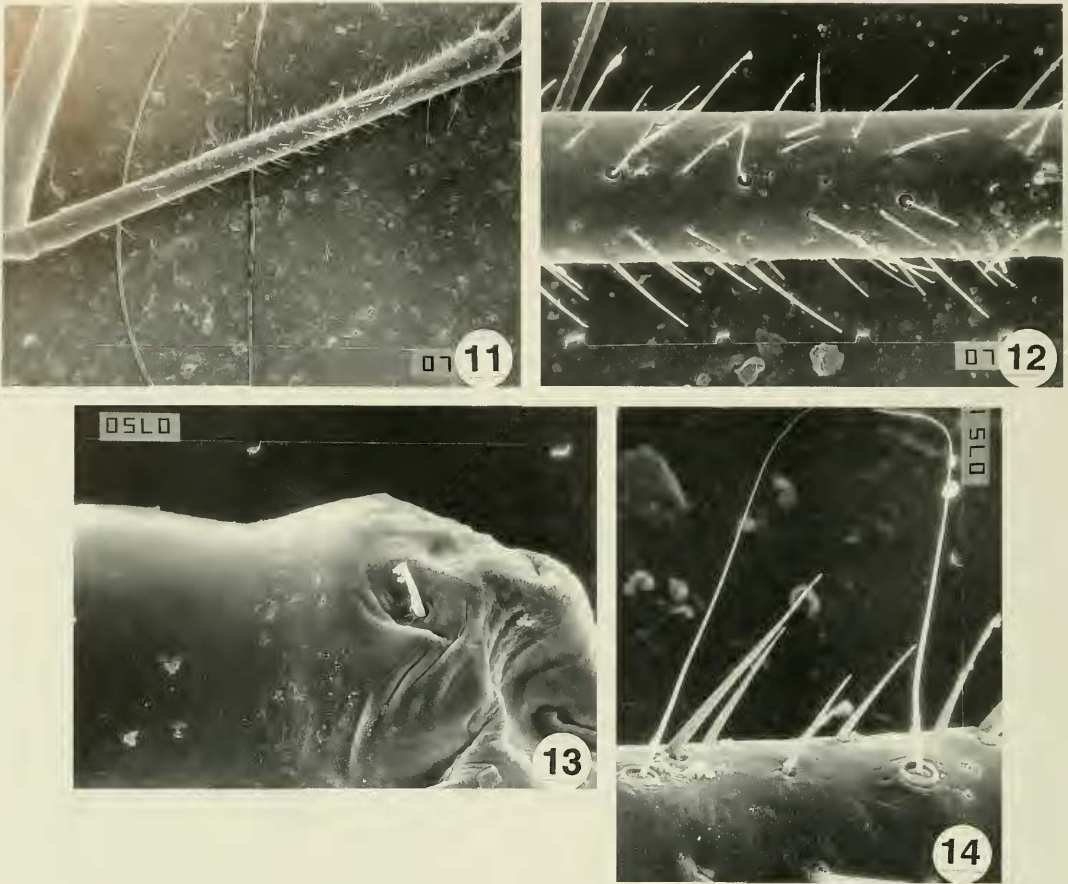
Thorax: Pronotum as for instar V. Length of pronotum 0.97–1.17 ($X = 1.06$), width of pronotum 1.30–1.55 ($X = 1.41$). Pleural areas pilose. Stridulatory sulci whitish. Propleuron and mesopleuron pale brown, tinged with orange, edges of propleuron dark brown, posterior and inferior fringe of mesopleuron and metapleuron dark brown, except medially pale brown. Prosternum, mesosternum and metasternum whitish, tinged with pale brown. Posterior lobe of pronotum pale brown, tinged with orange, posterior process whitish, with two brown spots laterally. Wing pads 1.38–1.75 long ($X = 1.58$). Legs whitish or pale brown, except coxae, femora distally, and tibiae basally pale brown, tinged with red. Dark stains more distinct in instar V; all segments setose. Trochanter I, femur I, and tibia I densely pilose, black ventrally.

Abdomen: Length 4.18–4.68 ($X = 4.36$), width 1.67–2.43 ($X = 2.06$). Abdomen fusiform, pale brown, tinged with orange; setose; segments 1 and 2 with whitish stains medially; scent glands well developed. Segment 6 with a black spot expanded laterally in same position as scent glands of anterior segments. Two whitish stains lateral to scent glands. Segments 4–6 with a red fringe distally and whitish stains centrally, in some specimens. Connexivum whitish distally and white continuing to the medial part of the abdomen. Segment 7 with a rectangular dark stain; segment 8 with a dark stain expanded laterally. Pale brown with lateral white lateral spots bordered in red. Ventrally pale brown (some specimens with black points), medially pale. Apical segments darker externally (Fig. 7).

Fifth instar (Fig. 8).—Total length 12.41–15.19 ($X = 13.98$). Length of head 3.47–4.07 ($X = 3.70$), width of head 1.50–



Figs. 3-10. *Montina confusa*. 3, First instar. 4, Second instar. 5, Third instar. 6, Fourth instar. 7, Fourth instar, ventral aspect of last segments of abdomen. 8-10, Fifth instar. 9, Head, lateral view. 10, ventral aspect of last segments of abdomen.



Figs. 11–14. *Montina confusa*, micrographs of antennal segment 2 trichobothria. 11, Antennal segment 2, 75 \times . 12, Medial trichobothrium, 350 \times . 13, Distal trichobothria, 750 \times . 14, Medial trichobothrium, 750 \times .

1.73 ($X = 1.58$). **Head:** Pyriform, pale brown, darker brown behind eyes, paler on neck, ocelli outlined in red; laterally (Fig. 9) with a stripe from antenna to eye, a small stain in front and an other stain posteriorly brown; labrum and clypeus dark brown, buccula distally dark brown. Eyes prominent, rounded anteriorly and truncated posteriorly, intense red, not passing superior or inferior edge of head. Width of eye 0.28–0.65 ($X = 0.47$), interocular space 0.90–1.10 ($X = 0.99$). Rostrum pale brown, stained dark brown (in some specimens joint of I and II darker); II and III paler than I and with more setae. Stain basally on I, II, and along edges on III. Rostral length 3.67–4.64 ($X = 4.12$), ratio of segment lengths ca. 1:1.12:0.40. Antenna elongate,

filiform, dark brown to almost black, paler on III and IV; two whitish bands on segment I, one on segments II and III; setae finer, more abundant distally. Segment II with a trichobothrium as seen in Figs. 11–14. Antennal length 15.08–17.19 ($X = 16.04$), ratio of segment lengths ca. 1:0.38:0.92:0.71.

Thorax: Pronotum orange (tinged with red in some specimens), with two anterolateral tubercles and anterior margin dark brown; with setae. Median sulci present, with sparse, short setae. Length of pronotum 1.47–2.00 ($X = 1.71$), width of pronotum 1.85–2.53 ($X = 2.17$). Propleuron and mesopleuron pale brown, tinged with orange, except dark brown margins, with narrow, pale borders. Stigma whitish interiorly.

Metapleuron dark brown, except basally and medially pale brown. Pleura pilose. Prosternum dark brown except stridulatory sulci whitish. Mesosternum and metasternum whitish, tinged with pale brown, a central fringe of black setae on mesosternum in some specimens. Scutellum pale brown, tinged with orange, posterior process whitish. Wings pads 3.64–4.37 long ($X = 3.93$), pale yellow, dark brown basally and along edge. Legs pale brown, tinged with pale yellow; coxae, femora distally, and tibiae basally pale brown, tinged with red; tarsi brown. Trochanters, femora, and tibiae tinged with dark brown. Trochanter I, femur I, and tibia I densely setose, black ventrally.

Abdomen: Length 6.52–7.91 ($X = 7.28$), abdominal width 3.17–3.92 ($X = 3.53$). Abdomen fusiform, pale brown, tinged with orange; setose; scent gland well developed on abdominal segments 3–5, consisting of black papilas, except base of first papila pale brown. Segment 6 with a black spot expanded laterally in same position as scent glands of anterior segments. Two whitish stains lateral to scent glands. Segments 3–6 with a red fringe distally, surrounded by whitish stains centrally. Connexivum distally and continuing to the medial part of the abdomen whitish; the remainder brown, tinged with orange. Pale brown ventrally, tinged with red surrounded by whitish spots laterally, last segments darker externally (Fig. 10).

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